Measure Information Template (JH-12)

Category: Nonresidential – additions and alterations.

Description: Require most additions to comply with the Energy Efficiency Requirements for new construction on a stand-alone basis, and require altered components of existing buildings to comply with the Energy Efficiency Requirements for new construction subject to certain exceptions.
(1) Title 24, Part 6, Section 149. Additions, Alterations, and Repairs to Existing Buildings that will be Nonresidential, High-Rise Residential, and Hotel/Motel Occupancies:

For additions, limit Section (a) 2Bii to additions with a floor area which is less than 750 ft^2 for consistency with the Washington State/Seattle Energy Code. *The Energy Efficiency Standards should have a goal of eventually bringing all existing buildings up to code over time. Section (a) 2Bii trades away the energy savings benefits of potential improvements in existing buildings by allowing a substandard addition to be constructed. Credits for improvement in the existing building should be limited to small additions. Larger additions should not be given preferential treatment over a stand-alone building of the same size.*

For the alterations prescriptive option, revise Section (b) 1A so that the altered component complies with the prescriptive building envelope requirements and the alteration does not increase the heat loss or heat gain. Exceptions are added for storm windows, replacing glass alone (in existing sash and frame), filling exposed cavities with insulation, and re-roofing. *The Energy Efficiency Standards should have a goal of eventually bringing all existing buildings up to code over time. To achieve this, each time that a portion of the building envelope is altered, that portion should be brought into compliance with the new construction requirements. An opening for a replacement window in an existing wall is similar to an opening for a new window in a new wall. Consequently, the requirements should not be different. For the opaque components, it makes sense to fill existing cavities exposed during construction. Exceptions allow some alterations that do not fully comply with the new construction requirements, but which still achieve some improvement in energy efficiency.*

For the alterations performance option, revise Section (b) 2 so that it is based on the prescriptive building envelope requirements. *The Energy Efficiency Standards should have a goal of eventually bringing all existing buildings up to code over time. To achieve this, each time that a portion of the building envelope is altered, that portion should be brought into compliance with the new construction requirements.*

Code Language Proposal:

- Title 24, Part 6, Section 149. Additions, Alterations, and Repairs to Existing Buildings that will be Nonresidential, High-Rise Residential, and Hotel/Motel Occupancies (pages 115-117).

Title 24, Part 6, SECTION 149
– ADDITIONS, ALTERATIONS, AND REPAIRS TO EXISTING BUILDINGS THAT WILL BE NONRESIDENTIAL, HIGH-RISE RESIDENTIAL, AND HOTEL/MOTEL OCCUPANCIES

(a) **Additions.** Additions shall meet either Item 1 or 2 below.

1. **Prescriptive approach.** The envelope and lighting of the addition, and any newly installed space-conditioning or water-heating system serving the addition, shall meet the applicable requirements of Sections 110 through 139, and Sections 142 through 146.

2. **Performance approach.**

   A. The envelope and lighting of the addition, and any newly installed space-conditioning or water-heating system serving the addition, shall meet the applicable requirements of Sections 110 through 139; and

   B. Either:

i. The addition alone shall comply with Section 141; or

ii. Provided that the addition has a floor area which is less than 750 ft^2, the energy efficiency of the existing building shall be improved so that the entire building meets the energy budget in Section 141 that would apply to the entire building, if the existing building was unchanged and the addition alone complied with Item 1.

EXCEPTION 1 to Section 149 (a): When heating, cooling, or service water heating to an addition are provided by expanding existing systems, the existing systems and equipment need not comply with Sections 110 through 129, or Sections 144 through 145.

EXCEPTION 2 to Section 149 (a): Where an existing system with electric reheat is expanded by adding variable air volume (VAV) boxes to serve an addition, total electric reheat capacity may be expanded not to exceed 50 percent of the existing installed electric heating capacity in any one permit and the system need not comply with Section 144 (g). Additional electric reheat capacity in excess of 50 percent may be added subject to the requirements of the Section 144 (g).

(b) **Alterations.** Alterations to existing nonresidential, high-rise residential, or hotel/motel buildings or alterations in conjunction with a change in building occupancy to a nonresidential, high-rise residential, or hotel/motel occupancy not subject to Subsection (a) shall meet either Item 1, 2, or 3 below.

1. **Prescriptive approach.** The altered envelope, space conditioning, lighting and water heating components, and any newly installed equipment serving the alteration, shall meet the applicable requirements of Sections 110 through 132; and

   A. Alterations to the building envelope shall:

      i. Neither increase the overall heat gain nor increase the overall heat loss of the building envelope; and

      ii. Meet the requirements of Section 143 for the altered component; and

   B. New space-conditioning systems shall meet the requirements of Section 144; and

   C. New lighting systems installed in conjunction with an increase in conditioned floor area, such as adding a mezzanine, shall meet the requirements of Section 146; and

   D. Alterations to existing lighting systems that increase the connected lighting load or replace more than 50 percent of the lighting fixtures shall meet the requirements of Section 146; and

   E. New service water-heating systems shall meet the requirements of Section 145.

   EXCEPTION 1 to Section 149 (b) 1 A ii: When a portion of an entire building's fenestration is repaired or replaced, or 50 square feet or less of glass is added, compliance with the solar heat gain coefficient requirements of Section 143 is not required.

   EXCEPTION 2 to Section 149 (b) 1 A ii: Storm windows may be added over existing fenestration.

   EXCEPTION 3 to Section 149 (b) 1 A ii: Glass replaced in existing sash and frame provided that glazing is of equal or lower U-factor.

EXCEPTION 4 to Section 149 (b) 1 A ii: Existing roof/ceiling, wall or floor cavities exposed during construction provided that these cavities are insulated to full depth with insulation having a minimum nominal value of R-3.0 per inch.

EXCEPTION 5 to Section 149 (b) 1 A ii: Existing walls and floors without framing cavities, provided that any new cavities added to existing walls and floors comply with Exception 4.

EXCEPTION 6 to Section 149 (b) 1 A ii: Existing roofs where the roof membrane is being replaced, but where either:
a. The roof sheathing or roof insulation is not exposed; or
b. There is existing roof insulation below the deck.

2. **Performance approach.**

   A. The altered envelope, spacing conditioning, lighting and water heating components, and any newly installed equipment serving the alteration, shall meet the applicable requirements of Sections 110 through 139; and

   B. The permitted space alone shall comply with Section 141
   .

3. **Semiconditioned nonresidential buildings.** The altered lighting components and any newly installed lighting equipment serving the alteration within an existing semiconditioned space, shall meet the applicable requirements of Sections 119, and 130 through 132.

   Alterations to existing lighting systems that increase the connected lighting load or replace more than 50 percent of the lighting fixtures shall meet the requirements of Section 146.

EXCEPTION 1 to Section 149 (b): When heating, cooling or service water heating for an alteration are provided by expanding existing systems, the existing systems and equipment need not comply with Sections 110 through 129 and Section 144 or 145.

EXCEPTION 2 to Section 149 (b): When existing heating, cooling or service water heating systems or components are moved within a building, the existing systems or components need not comply with Sections 110 through 129 and Section 144 or 145.

EXCEPTION 3 to Section 149 (b): Where an existing system with electric reheat is expanded when adding variable air volume (VAV) boxes to serve an alteration, total electric reheat capacity may be expanded not to exceed 20 percent of the existing installed electric capacity in any one permit and the system need not comply with Section 144 (g). Additional electric reheat capacity in excess of 20 percent may be added subject to the requirements of the Section 144 (g).

(c) **Repair**s. Repairs shall not increase the preexisting energy consumption of the repaired component, system, or equipment.

(d) **Alternate Method of Compliance.** Any addition, alteration, or repair may comply with the requirements of Title 24, Part 6 by meeting the applicable requirements for the entire building.

Benefits: Achieves energy savings through improvements in existing buildings.

Environmental Impact: Energy savings.

Type of Change: Prescriptive.

Measure Availability and Cost: Complying fenestration products and insulation are widely available. Building envelope efficiency improvements are required for additions and alterations in the Washington State/Seattle Energy Codes, Section 1132.1.

Useful Life, Persistance and Maintenance: Comparable to new construction.

Performance Verification: Comparable to new construction.

Cost Effectiveness: Complying fenestration products and insulation are widely available. An opening for a replacement window in an existing wall is similar to an opening for a new window in a new wall. Consequently, the requirements should not be different. For the opaque components, it makes sense to fill existing cavities exposed during construction. Building envelope efficiency improvements are required for additions and alterations in the Washington State/Seattle Energy Codes, Section 1132.1.

Analysis Tools: NA.

Relationship to Other Measures: NA.

Bibliography and Other Research: Washington State/Seattle Energy Codes, Section 1132.1.